

American Electric Power
Cook Nuclear Plant
One Cook Place
Bridgman, MI 49106
616 465 5901



June 3, 1998

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Operating Licenses DPR-58
Docket No. 50-315

Document Control Manager:

In accordance with the criteria established by 10 CFR 50.73 entitled Licensee Event Report System, the following report is being submitted:

98-010-01

Sincerely,

A handwritten signature in cursive script, appearing to read "J. R. Sampson", with a long horizontal flourish extending to the right.

J. R. Sampson
Site Vice President

/mbd

Attachment

c: C. J. Paperiello (Acting), Region III
J. R. Sampson
P. A. Barrett
S. J. Brewer
R. Whale
D. Hahn
Records Center, INPO
NRC Resident Inspector

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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Donald C. Cook Nuclear Plant - Unit 1

DOCKET NUMBER (2)

50-315

Page 1 of 4

TITLE (4)

Ice Condenser Intermediate Deck Doors Structural Discrepancies Result from Failure to Follow Procedures

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|--------------------|-----|------|---|-------------------|-----------------|-------------------|-----|------|-------------------------------|--|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| 03 | 03 | 98 | 98 | -- 010 -- | 01 | 06 | 03 | 98 | Cook - Unit 2 | 50-316 |
| OPERATING MODE (9) | | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11) | | | | | | | |
| 5 | | | 20.2201(b) | | | 20.2203(a)(3)(i) | | | 50.73(a)(2)(iii) | 73.71(b) |
| POWER LEVEL (10) | | | 20.2203(a)(1) | | | 20.2203(a)(3)(ii) | | | 50.73(a)(2)(iv) | 73.71e |
| 0 | | | 20.2203(a)(2)(i) | | | 20.2203(a)(4) | | | 50.73(a)(2)(v) | OTHER |
| | | | 20.2203(a)(2)(ii) | | | 50.36(c)(1) | | | 50.73(a)(2)(vii) | (Specify in Abstract below and in Text, NRC Form 366A) |
| | | | 20.2203(a)(2)(iii) | | | 50.36(c)(2) | | | 50.73(a)(2)(viii)(A) | |
| | | | 20.2203(a)(2)(iv) | | | 50.73(a)(2)(i) | | | 50.73(a)(2)(viii)(B) | |
| | | | 20.2203(a)(2)(v) | | | X 50.73(a)(2)(ii) | | | 50.73(a)(2)(x) | |

LICENSEE CONTACT FOR THIS LER (12)

NAME

TELEPHONE NUMBER (Include Area Code)

Mr. Paul Schoepf, Safety Related Mechanical Engineering Superintendent

616/465-5901, x2408

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS |
|-------|--------|-----------|--------------|---------------------|-------|--------|-----------|--------------|---------------------|
| | | | | | | | | | |
| | | | | | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

| | | | | | | |
|---|---|----|-------------------------------|-------|-----|------|
| YES (If yes, complete EXPECTED SUBMISSION DATE). | X | NO | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|----|-------------------------------|-------|-----|------|

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

Between February 9, 1998 and March 5, 1998, with both Unit 1 and Unit 2 in Mode 5, discrepancies were found while removing parts of the intermediate deck in both units' ice condensers. Various structural connections in the ice condenser intermediate deck did not conform to the drawing or current procedural requirements. These discrepancies included missing, damaged, or improperly installed shims, washers, bushings, and bolts. These deviations, when evaluated in aggregate, could have created a potential for some of the intermediate deck doors to become misaligned if a seismic event had occurred during past operation. This was determined reportable under 10CFR50.72(b)(2)(i), and an ENS notification was made at 1505 hours on March 25, 1998. An interim LER for this condition was submitted on April 3, 1998, in accordance with 10CFR50.73(a)(2)(ii), as a condition outside the design basis, as is this updated LER.

The cause for the event was failure to follow procedures and drawings during the performance of earlier work activities. Contributing to the cause was the lack of documentation of previous dispositions of acceptable deviations from procedures and drawings. The condition will be corrected by removing all intermediate deck door frames and support beams and reassembling them utilizing appropriate drawings and procedures, with QC verification.

The safety significance of this condition has been evaluated. Based on engineering judgement, the ice condenser intermediate deck would have performed its intended function, as supported by the as found levelness of the intermediate deck support steel, as well as the routine surveillance testing of the opening forces for the intermediate deck doors. It has been determined that this condition has no safety significance, and therefore, the health and safety of the public has not been jeopardized.

LICENSEE EVENT CONTINUATION

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| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | | | PAGE (3) |
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| | | YEAR | SEQUENTIAL | REVISION | |
| Cook Nuclear Plant - Unit 1 | 50-315 | 98 | -- 010 -- | 01 | 2 OF 4 |

TEXT (if more space is required, use additional NRC Form 366A's) (17)

Condition Prior to Event

Unit 1 was in Mode 5, Cold Shutdown

Unit 2 was in Mode 5, Cold Shutdown

Description of the Event

The ice condenser is a completely enclosed annular compartment located around approximately 300 degrees of the perimeter of the upper compartment of the containment, but penetrating the operating deck so that a portion extends into the lower compartment of the containment. The lower portion has a series of hinged doors, the lower inlet doors, exposed to the atmosphere of the lower containment compartment which, for normal plant operation, are designed to remain closed. At the top of the ice condenser is another set of doors, the top deck doors, exposed to the atmosphere of the upper compartment, which remain closed during normal plant operation. Intermediate deck doors, located below the top deck doors, form the floor of a plenum at the upper part at the ice condenser. These doors remain closed during normal plant operation. In the ice condenser, ice is held in baskets arranged to promote heat transfer from steam to ice to allow the ice condenser to perform its function. The ice baskets are physically located between the lower inlet doors and the intermediate deck doors.

In the event of a Loss of Coolant Accident (LOCA) or Steam Line Break, the lower inlet doors located below the operating deck open due to the pressure rise in the lower compartment. This allows the air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors of the ice condenser to open, which allows the air to flow out of the ice condenser into the upper compartment. The ice condenser condenses the steam as the steam enters the ice condenser compartment, thus limiting the peak pressure and temperature buildup in the containment.

During the disassembly of the intermediate deck of the ice condensers, various discrepancies from the original design relating to the structural connections were discovered. These discrepancies included missing, damaged, or improperly installed shims, washers, bushings, and bolts. Separate condition reports were submitted for each ice condenser bay where discrepancies were discovered. These condition reports were subsequently combined into one condition report. As work progressed, additional discrepancies were discovered in more bays as they were being disassembled. Currently all of the Unit 1 intermediate deck bays have been disassembled. Discrepancies in the Unit 1 intermediate deck connections were discovered in 23 of the 24 bays of the ice condenser. Bay 5 of the Unit 1 ice condenser had no discrepancies noted during disassembly. Although not all of the Unit 2 ice condenser bays have been disassembled, the information presented in the investigation of the discrepancies in the Unit 1 intermediate deck connections will be considered to envelope the Unit 2 intermediate deck discrepancies due to the similarities in the as-found conditions.

Routine maintenance and surveillance activities of the ice condenser in the past have not resulted in the disassembly of the intermediate decks in both units ice condensers. Since the original construction period of the plant, limited disassembly of a few bays in each ice condenser occurred in 1992. In Unit 1, the intermediate deck door frames were removed in bays 4, 5, 12, 14, 19, and 20 with intermediate deck steel being partially disassembled in bays 4, 5, 12, and 20. In Unit 2, the intermediate deck door frames were removed in bays 2, 3, 4, and 15 with intermediate deck steel being partially disassembled in bays 2, 3, and 15.

LICENSEE EVENT CONTINUATION

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| Cook Nuclear Plant - Unit 1 | | 50-315 | | 98 | -- 010 -- | 01 | 3 OF 4 |

TEXT (if more space is required, use additional NRC Form 366A's) (17)

Description of Event (cont'd)

The original Westinghouse construction installation procedure for the intermediate deck beams was relatively simplistic with the main emphasis being placed upon the shimming required to achieve a level plane to within +1/8 inch (higher) to -0.0 (lower). Drilling of bolt holes was performed during beam installation. Various thicknesses of shims were provided so that the levelness criteria could be accomplished. The original Westinghouse construction installation procedure for intermediate deck doors and frames was also relatively simplistic with emphasis being placed upon the door frames having bearing at door hinge block connections to the intermediate deck beams and free movement of the doors. These characteristics of the intermediate deck beams and door frames were emphasized so that the seismic qualification of the structure would be maintained during the installation process. If the seismic analysis were to be invalidated by the installation of the structural components, the opening door forces for intermediate deck doors could be exceeded.

No records could be retrieved which provided disposition of the discrepancies reported from the original plant construction period. However, the individual discrepancies noted could be considered to have been within acceptable steel erection tolerances at the time of construction and therefore not fully documented. During the period of original construction of the Ice Condensers, construction oversight and disposition of discrepancies was performed by the Original Equipment Manufacturer, Westinghouse.

Procedure **12 CHP 5021.MCD.004, Revision 1, "Removal and Replacement of Ice Condenser Ice Baskets", was utilized to disassemble and reinstall the intermediate deck door frames and support beams during the 1992 maintenance activities. This procedure required Quality Control (QC) inspector verification of all connections during the installation process. Included in the verification was conformance with the drawing configuration including thread engagement, fastener torque and shim bearing.

At the time of the discovery of the discrepancies noted in the previously mentioned condition report, procedure 12 CHP 5021.MCD.004, Revision 2 was being utilized to disassemble the intermediate deck door frames and support beams. This procedure requires the levelness of the plane formed by the intermediate deck beams in each bay be determined prior to disassembly. Each bay disassembled during the 1992 maintenance activities and the current maintenance activities has been found to be within the specified levelness criteria.

Cause of the Event

The root cause of the physical discrepancies of the structure of the ice condensers intermediate deck are considered to be failure to follow procedures and drawings during the performance of work activities. Contributing to this root cause was the lack of documentation of previous dispositions of acceptable deviations from procedures and drawings.

Analysis of the Event

The NRC was notified of this event on March 25, 1998, at 1505 hours. The NRC notification was made under 10 CFR 50.72(b)(2)(i) as a condition outside the design basis of the plant. This event is being reported under 10 CFR 50.73 (a)(2)(ii) as a condition that resulted in the nuclear power plant being in a condition that was outside the design basis of the plant.

LICENSEE EVENT CONTINUATION

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TEXT (if more space is required, use additional NRC Form 366A's) (17)

Analysis of the Event (cont'd)

The design bases of the ice condenser include concurrent seismic and LOCA events. However, the licensing bases of the plant do not include a concurrent occurrence of these events. The intended function of the ice condenser intermediate deck is to form a compartment boundary at the top elevation of the ice bed. This boundary functions as a barrier to minimize heat gain into the ice bed during normal plant operations and to support the intermediate deck doors in a configuration that allows them to open during accident conditions within specified force limits. Based upon engineering judgement, the ice condenser intermediate deck would have performed its intended function. This determination is supported by the as-found levelness of the intermediate deck support steel, as well as the routine surveillance testing of the opening forces for the intermediate deck doors. Although isolated occurrences of intermediate deck door surveillance failure have been reported over the life of the ice condenser, the majority of these occurrences were attributed to ice and frost accumulation.

Corrective Actions

All intermediate deck door frames and support beams will be removed in support of current ongoing maintenance activities in the ice condenser of both units. The intermediate decks will be reassembled utilizing appropriate drawings and procedures. The procedures will utilize QC verification of conformance with applicable drawing requirements and installation procedure requirements.

Procedure 12 CHP 5021.MCD.004 for the removal and replacement of the intermediate deck doors, support steel and ice baskets contains the appropriate level of QC verification for the work process described. Attention to detail including strict procedure compliance and strict conformance to drawings has significantly improved from 1992 to the present. Improvements in procedural and drawing compliance standards will preclude reoccurrence of the discrepancies which occurred as a result of the use of the procedure in 1992.

The investigation describing this event will be provided to the QC staff in the form of a lessons learned. This lessons learned will be presented to the QC staff prior to the ice condenser intermediate deck and door frames being reassembled.

In recognition of the need for improvement in procedural compliance and other human performance areas, a strategy has been initiated to accomplish those needed improvements. "Human Performance Initiatives" is a multi-part program that begins with the communication of expectations to all workers at all levels, provides training on how to meet and implement those expectations, institutes field monitoring such as on the spot coaching, and evaluates the results of the program. In addition to the Initiatives, an Accountability Directive has been written to define the responsibility of personnel for performance results and compliance with management expectations, and motivate individuals to prevent human errors.

Failed Component Identification

Not Applicable

Previous Similar Events

None

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 AUTH. NAME AUTHOR AFFILIATION
 SCHOEPF, P. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
 SAMPSON, J.R. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 98-010-01: on 980303, ice condenser intermediate deck
 doors structural discrepancies were noted. Caused by failure
 to follow procedure. Removed all intermediate deck door
 frames & support beams & reassembling parts W/980603 ltr.

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